ADITYA JAIN

SG-04 ⋄ Girnar House,IIT Delhi , 110016
(+91) 82393 88809 ⋄ aditya0212jain@gmail.com

EDUCATION

Indian Institute of Technology Delhi *July 2016 - May 2020(Expected)*
Undergraduate in Department of Computer Science and Engineering Overall GPA: 8.51/10
Aklank Public School *April 2014 - March 2016*
All India Senior Secondary Certificate Examination Score : 93.00%

ACADEMIC ACHIEVEMENTS

IIT Joint Entrance Examination (JEE) Advanced 2016: Secured All India Rank **96**
KVPY Fellowship 2016: Secured All India Rank **126** and awarded scholarship by Indian Institute of Science, Bangalore
National Standard Examination in Physics 2015: among the **top 1%** of 44,032 participants from all over India
National Standard Examination in Chemistry 2015: among the **top 1%** of 39,671 participants from all over India

INTERNSHIP EXPERIENCE

Samsung AI Center Seoul, South Korea May 2019 - July 2019
Guide: Dr. Jungmin Lee

- Worked as part of the AI Core Team on an outfit grader using images of the items as input for recommendation system
- Designed a neural network architecture with Bi-LSTMs as baseline and attention beating the state of the art performance
- Solved the existing problem of low recall by using LDAM loss function along with various sample generation techniques

TU Delft, The Netherlands May 2018 - July 2018
Guide: Prof. Alberto Bacchelli github repo

- Developed a chrome extension enabling better test code review practices through its altered viewing system in Github
- Integrated code navigation in Github using Language Server Protocol and Eclipse Java Language Server for JAVA files
- Provided code coverage information using a third party API showing total coverage and lines covered in test code

PROJECTS

Face Detection and Recognition for MAVI(Mobility Assistant For Visually Impaired) July 2019 - Present
Independent Project github repo *Supervisor: Prof. Chetan Arora*

- Implemented **RetinaFace** in tensorflow taking shallower layers for detecting **tiny faces** and **FaceNet** for face recognition
- Using Intel's OpenVino to port the tensorflow models on **Intel Movidius 2** with Raspberry pi to compute on the edge
- Developing a lightweight **end-to-end network** for face detection and recognition with self **alignment learning**

Tejas-CNN: A CNN Accelerator Simulator July 2019 - Present
Bachelor's Thesis Project *Supervisor: Prof. S. R. Sarangi*

- Building first of its kind simulator for analyzing & exploration of **Systolic** & **SIMD** based CNN Accelerators' architecture
- Developing it as a modular JAVA software capable of handling different types of **dataflows** on the input architecture
- Simulating by doing **real computation** to explore better optimization techniques and providing **cycle accurate timing**

Raytracing and Scene Rendering Using OpenGL January 2019 - Present
Course Project: Computer Graphics github repo *Supervisor: Prof. Subodh Kumar*

- Implemented an interactive scene with 4 depth **distributed** recursive ray tracing using **Blinn/Phong** illumination model
- Replacing the previous raytracing with OpenGL pipeline writing custom **vertex** and **fragment shader** for the scene

Liver Segmentation from abdominal CT Scans February 2019 - March 2019
Course Project: Advanced Computer Vision github repo *Prof. Chetan Arora*

- Designed a U-Net based convolutional neural network for the segmentation of liver from abdominal CT scan images
- Used deep learning techniques such as Dilated Convolutions and Inception Modules to further improve the performance

Parallel and Distributed Computing January 2019 - April 2019
Course Project: Intro. to Parallel & Distributed Computing github repo *Prof. Subodh Sharma*

- Used Pthread, OpenMP, CUDA for GPU and Message Passing Interface (MPI standard) for implementing parallel/distributed versions of K Nearest Neighbours, Principal Component Analysis, Jacobis algorithm and Singular Matrix Decomposition and analyzed the results by varying parameters such as number of threads, cores etc.

Virtualization and Signal Handling in xv6 February 2019 - April 2019
Course Project: Operating Systems github repo *Prof. S. R. Sarangi*

- Added virtualization in xv6 OS using **containers** by creating their own fair virtual scheduler and independent file system
- Implemented **Maekawa's** mutual exclusion algorithm in both linux and xv6 by building signal handling in xv6 kernel
- Added inter process communication with multicast and used it along with barriers to develop parallel version of programs

Multicycle ARM based Processor and Reversi game in VHDL January 2018 - April 2018
Course Project: Computer Architecture github repo *Prof. Anshul Kumar*

- Wrote a processor for ARM instructions with various components such as memory, shifter, alu, register file etc.
- Implemented the game of Reversi in both JAVA and assembly language with simulation on ARMSim

AI Player for Yinsh August 2018 - September 2018
Course Project: Principles of Artificial Intelligence github repo *Prof. Mausam*

- Created an AI player for the adversarial strategy board game Yinsh using **Alpha Beta Minimax** search algorithm
- Designed different heuristic functions & strategies for the game along with optimizations such as dynamic depth cutoff
- Implemented **Monte Carlo tree search** and **transposition tables** to increase ply searched in the allotted time

Software Package for Engineering Drawing January 2018 - April 2018
Course Project: Design Practices github repo *Prof. Subhashis Banerjee*

- Developed a C++ package for 3D modeling and conversions of given a orthographic image to isometric and vice versa
- Designed the functional specification , mathematical model and **UML** diagrams for better understanding and practice

TECHNICAL STRENGTHS

Computer Languages	C/C++, Java, Python, OCaml, Prolog, VHDL, Javascript, Bash, Typescript, HTML
Software & Tools	Xilinx ISE & Vivado, Android Studio, Tensorflow, CUDA, OpenMP, OpenGL, OpenCV

RELEVANT COURSES

Intro. To Computer Science, Calculus, Linear Algebra & Differential Equations, Data Structures And Algorithms, Discrete Mathematical Structures, Digital Logic & System Design, Probability & Stochastic Pro., Computer Architecture, Programming Languages, Design Practices, Principles of Artificial Intelligence, Machine Learning, Computer Networks, Analysis and Design of Algorithms, Operating Systems, Intro. to Parallel & Distributed Programming, Advance Computer Vision, Theory of Computation, Computer Graphics*, Learning/AI for Cognitive Robot Intelligence*, Advanced Distributed Systems*, Applied Game Theory* , ** to be completed by May 2020*

EXTRA-CIRRUCULAR

Volunteer for **AROHAN** program : taught electromagnetism to underprivileged students preparing for JEE 2018
Academic Mentor (Aug,2017-April,2018) : Provided help to first year students facing problem in the course of APL100
Secured 54th position in **ACM ICPC 2017** Asia Gwalior First Round with a team of three members